Bulletin of the Academy of Sciences of the USSR Division of Chemical Science 1978 vol.27 N2, pages 381-383

# Interaction of dimethyl phosphite with tetracyclone

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## Abstract

1. Tetracyclone reacts with dimethyl phosphite in the absence of catalysts at the carbonyl group to form an enol phosphate (O,O′-dimethyl 2, 3, 4, 5-tetraphenyl-1,4-cyclopentadienyl phosphate)and by 1,4- and 1,6-addltion to the conjugated system C=C-C=C-C=O to form a conjugated γ-ketophosphonate [dimethyl (1-oxo-2,3,4,5-tetraphenyl-4-cyclope-ten-3-yl)phosphonate]and nonconjugated and conjugated γ-ketophospho-nates [respectively dimethyl (l-oxo-2,3,4,5-tetraphenyl-3-cyclopenten-2-yl)phosphonate and dimethyl (1-oxo-2, 3,4,5-tetraphenyl-4-cyclopenten-2-yl)phosphonate]. 2. The presence of triethylamine causes the formation of an α-hydroxyphosphonate [(1-hydroxy-2,3,4,5-tetraphenyl-2, 4-cyclopentadien-1-yl)phosphonic acid] to be kinetically favored; this is convertedby bases to the enol phosphate and the nonconjugated β-ketophosphonate. The latter under the reaction conditions gives only the product of prototropic isomarization - the conjugated β-ketophosphonate. 

http://dx.doi.org/10.1007/BF00923881